

CLAIMS

1. A hypodermic needle, comprising:
a hollow tube having an angled end with respect to a longitudinal axis of the tube, the end having an opening surrounded by an external peripheral rim,
wherein at least a portion of the external peripheral rim is beveled back at least 25%, to form an internal beveled surface.
2. The hypodermic needle of claim 1, wherein the at least a portion of the external peripheral rim is beveled back at least 30%.
3. The hypodermic needle of claim 1, wherein the at least a portion of the external peripheral rim is beveled back at least 35%.
4. The hypodermic needle of claim 1, wherein the at least a portion of the external peripheral rim is beveled back at least 40%.
5. The hypodermic needle of claim 1, wherein the at least a portion of the external peripheral rim is beveled back at least 50%.
6. The hypodermic needle of claim 1, wherein the internal beveled surface is curved.
7. The hypodermic needle of claim 1, wherein a circle coincident with the curvature of the internal beveled surface has a radius of curvature that is at least 25% of a thickness of a wall of the needle.
8. The hypodermic needle of claim 1, wherein the internal beveled surface surrounds 5-85% of the opening.
9. The hypodermic needle of claim 1, wherein the internal beveled surface surrounds 20-70% of the opening.
10. A hypodermic needle, comprising:
a hollow tube having an angled end with respects to a longitudinal axis of the tube, the end having an opening surrounded by an external peripheral rim, and
means for reducing fluid stress at the entrance of the needle.

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11. In a hypodermic needle having an internal substantially cylindrical surface; an external substantially cylindrical surface; an end angled with respect to a longitudinal axis of the needle, the end having an opening and defining a piercing tip; an outer peripheral rim, the rim partially surrounding a first region of the opening proximal to the piercing tip and connecting the external and internal cylindrical surfaces of the needle; the improvement comprising an internal beveled surface on the internal surface of the needle partially surrounding a second region of said opening opposite the first region, wherein the degree of beveling back of the rim is at least 25%.

12. The hypodermic needle of claim 11, wherein the at least a portion of the external peripheral rim is beveled back at least 30%.

13. The hypodermic needle of claim 11, wherein the at least a portion of the external peripheral rim is beveled back at least 50%.

14. A method of preparing a sample, comprising withdrawing blood with the hypodermic needle of Claim 1.

15. In a method of preparing a sample, comprising withdrawing blood with a hypodermic needle having an internal substantially cylindrical surface; an external substantially cylindrical surface; an end angled with respect to a longitudinal axis of the needle, the end having an opening and defining a piercing tip; an outer peripheral rim, the rim partially surrounding a first region of the opening proximal to the piercing tip and connecting the external and internal cylindrical surfaces of the needle; the improvement comprising withdrawing the blood with a hypodermic needle having an internal beveled surface on the internal surface of the needle partially surrounding a second region of said opening opposite the first region, wherein the degree of beveling back of the rim is at least 25%.

16. A method of making the hypodermic needle of claim 1, comprising:

beveling back an external peripheral rim of a hypodermic needle.

17. A method of making the hypodermic needle of claim 2,
comprising:

beveling back an external peripheral rim of a hypodermic needle.

18. A method of making the hypodermic needle of claim 3,
comprising:

beveling back an external peripheral rim of a hypodermic needle.

19. A method of making the hypodermic needle of claim 7,
comprising:

beveling back an external peripheral rim of a hypodermic needle.

20. A method of making the hypodermic needle of claim 8,
comprising:

beveling back an external peripheral rim of a hypodermic needle.

FOOTNOTES